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[illegible]

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Ile	Cys	Ala	Thr	Pro	Arg	Leu	Phe	Pro	Asp	Asp	Pro	Arg	Glu	Gly	Gln	50	55	60
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Ala	Leu	Gln	Lys	Ser	Arg	His	Leu	Leu	Asp	Gln	Val	Ile	Pro	Pro	Gly	85	90	95
Gln	Pro	Ser	Trp	Ala	Asp	Gln	Glu	Tyr	Arg	Gly	Ser	Phe	Thr	Cys	Arg	100	105	110
Ile	Trp	Gln	Phe	Gly	Arg	Trp	Val	Glu	Val	Thr	Thr	Asp	Asp	Arg	Leu	115	120	125
Pro	Cys	Leu	Ala	Gly	Arg	Leu	Cys	Phe	Ser	Arg	Cys	Gln	Arg	Glu	Asp	130	135	140
Val	Phe	Trp	Leu	Pro	Leu	Leu	Glu	Lys	Val	Tyr	Ala	Lys	Val	His	Gly	145	150	155
Ser	Tyr	Glu	His	Leu	Trp	Ala	Gly	Gln	Val	Ala	Asp	Ala	Leu	Val	Asp	165	170	175
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Ser	Gly	Gly	Gln	Gln	Asp	Arg	Pro	Gly	Arg	Trp	Glu	His	Arg	Thr	Cys	195	200	205
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Leu	Trp	Arg	Glu	Gly	Gly	Glu	Gly	Trp	Ser	Gln	Val	Asp	Ala	Ala	Val	275	280	285
Ala	Ser	Glu	Leu	Leu	Ser	Gln	Leu	Gln	Glu	Gly	Glu	Phe	Trp	Val	Glu	290	295	300
Glu	Glu	Glu	Phe	Leu	Arg	Glu	Phe	Asp	Glu	Leu	Thr	Val	Gly	Tyr	Pro	305	310	315
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50 55 60
Val Lys Gln Gly Leu Leu Gly Asp Cys Trp Phe Leu Cys Ala Cys Ala
65 70 75 80
Ala Leu Gln Lys Ser Arg His Leu Leu Asp Gln Val Ile Pro Pro Gly
85 90 95
Gln Pro Ser Trp Ala Asp Gln Glu Tyr Arg Gly Ser Phe Thr Cys Arg
100 105 110
Ile Trp Gln Phe Gly Arg Trp Val Glu Val Thr Thr Asp Asp Arg Leu
115 120 125
Pro Cys Leu Ala Gly Arg Leu Cys Phe Ser Arg Cys Gln Arg Glu Asp
130 135 140
Val Phe Trp Leu Pro Leu Leu Glu Lys Val Tyr Ala Lys Val His Gly
145 150 155 160
Ser Tyr Glu His Leu Trp Ala Gly Gln Val Ala Asp Ala Leu Val Asp
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Leu Thr Gly Gly Leu Ala Glu Arg Trp Asn Leu Lys Gly Val Ala Gly
180 185 190
Ser Gly Gly Gln Gln Asp Arg Pro Gly Arg Trp Glu His Arg Thr Cys
195 200 205
Arg Gln Leu Leu His Leu Lys Asp Gln Cys Leu Ile Ser Cys Cys Val
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Leu Ser Pro Arg Ala Gly Ala Arg Glu Leu Gly Glu Phe His Ala Phe
225 230 235 240
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245 250 255
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260 265 270
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275 280 285
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Glu Glu Glu Phe Leu Arg Glu Phe Asp Glu Leu Thr Val Gly Tyr Pro
305 310 315 320

Val Thr Glu Ala Gly His Leu Gln Ser Leu Tyr Thr Glu Arg Leu Leu
325 330 335

Cys His Thr Arg Ala Leu Pro Gly Ala Trp Val Lys Gly Gln Ser Ala
340 345 350

Gly Gly Cys Arg Asn Asn Ser Gly Phe Pro Ser Asn Pro Lys Phe Trp
355 360 365

Leu Arg Val Ser Glu Pro Ser Glu Val Tyr Ile Ala Val Leu Gln Arg
370 375 380

Ser Arg Leu His Ala Ala Asp Trp Ala Gly Arg Ala Arg Ala Leu Val
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Gly Asp Ser His Thr Ser Trp Ser Pro Ala Ser Ile Pro Gly Lys His
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Tyr Gln Ala Val Gly Leu His Leu Trp Lys Val Glu Lys Arg Arg Val
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Asn Leu Pro Arg Val Leu Ser Met Pro Pro Val Ala Gly Thr Ala Cys
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His Ala Tyr Asp Arg Glu Val His Leu Arg Cys Glu Leu Ser Pro Gly
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Tyr Tyr Leu Ala Val Pro Ser Thr Phe Leu Lys Asp Ala Pro Gly Glu
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Ala Gly Thr Tyr Lys Val Val Pro Ser Thr Tyr Leu Pro Asp Thr Glu
 465 470 475 480

Gly Ala Phe Thr Val Thr Ile Ala Thr Arg Ile Asp Arg Pro Ser Ile
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 <213> Human

A: 230957(4Y7H01 DOC)

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A: 230957(4Y7H01: DOC)

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<213> Human
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Pro Leu Ala Gln Phe Arg Glu Asp Ile Thr Trp Arg Arg Pro Gln Glu
          35          40          45

Ile Cys Ala Thr Pro Arg Leu Phe Pro Asp Asp Pro Arg Glu Gly Gln
  50          55          60

Val Lys Gln Gly Leu Leu Gly Asp Cys Trp Phe Leu Cys Ala Cys Ala

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Ile	Trp	Gln 115	Phe	Gly	Arg	Trp	Val 120	Glu	Val	Thr	Thr	Asp 125	Asp	Arg	Leu
Pro	Cys 130	Leu	Ala	Gly	Arg	Leu 135	Cys	Phe	Ser	Arg	Cys	Gln	Arg	Glu	Asp
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 <211> 139
 <212> PRT
 <213> Human

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             20             25            30
Pro Leu Ala Gln Phe Arg Glu Asp Ile Thr Trp Arg Arg Pro Gln Glu
 35             40            45
Ile Cys Ala Thr Pro Arg Leu Phe Pro Asp Asp Pro Arg Glu Gly Gln
 50             55            60
Val Lys Gln Gly Leu Leu Gly Asp Cys Trp Phe Leu Cys Ala Cys Ala
 65             70            75            80
Ala Leu Gln Lys Ser Arg His Leu Leu Asp Gln Val Ser Cys Pro Val
             85             90            95
Gln Leu Pro Ala Asp Trp Thr Cys Lys Val Gln Pro Val Trp Leu Glu
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Ser Pro Asp Ser Ala Thr Trp Gly Ser Trp Lys
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 <213> Human

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 <212> PRT
 <213> Human

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 35 40 45
 Pro Glu Gly Gly Arg Ser Gln Asp Ala Pro Pro Leu Leu Leu Gln Glu
 50 55 60
 Pro Leu Leu Ser Cys Val Pro His Arg Tyr Ala Gln Glu Val Ser Arg
 65 70 75 80
 Leu Cys Leu Leu Pro Ala Gly Thr Tyr Lys Val Val Pro Ser Thr Tyr
 85 90 95
 Leu Pro Asp Thr Glu Gly Ala Phe Thr Val Thr Ile Ala Thr Arg Ile
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 Asp Arg Pro Ser Ile His Ser Gln Glu Met Leu Gly Gln Phe Leu Gln
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Glu Val Ser Val Met Ala Val Met Lys Thr
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<210> 17
<211> 864
<212> DNA
<213> Human

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<211> 666
<212> PRT
<213> Mus musculus

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Pro Leu Ala Gln Phe Arg Glu Asp Ile Thr Trp Arg Arg Pro Gln Glu
35 40 45
Ile Cys Ala Thr Pro Gln Leu Phe Pro Asp Asn Pro Trp Glu Gly Gln
50 55 60
Val Lys Gln Gly Leu Leu Gly Asp Cys Trp Phe Leu Cys Ala Cys Ala
65 70 75 80
Ala Leu Gln Lys Ser Gln His Leu Leu Asp Gln Val Phe Pro Pro Gly
85 90 95
Gln Pro Gly Trp Ser Asp Gln Lys Tyr Gln Gly Phe Phe Thr Cys Arg
100 105 110
Ile Trp Gln Phe Gly His Trp Glu Glu Val Thr Ile Asp Asp Arg Leu
115 120 125
Pro Cys Leu Ala Gly Arg Leu Cys Phe Ser Arg Cys Gln Arg Glu Asp
130 135 140
Val Phe Trp Leu Pro Leu Leu Glu Lys Ala Tyr Ala Lys Val His Gly
145 150 155 160

Ser Tyr Glu His Leu Trp Ala Gly Gln Val Ala Asp Ala Leu Val Asp
165 170 175

Leu Thr Gly Ser Leu Ala Glu Arg Trp Ser Leu Lys Asp Val Thr Lys
180 185 190

Ala Ser Gly Gln Gln Asp Arg Pro Ser Gly Gly Glu His Arg Thr Cys
195 200 205

Arg Gln Leu Leu His Leu Lys Asp Arg Cys Leu Ile Ser Cys Ser Val
210 215 220

Leu Ser Pro Arg Ala Gly Ala Arg Glu Leu Gly Glu Phe His Ala Phe
225 230 235 240

Ile Ile Ser Asp Leu Gln Glu Leu Arg Ser Gln Thr Gly Gln Gly Ile
245 250 255

Leu Leu Leu Arg Ile His Asn Pro Trp Gly Arg Arg Cys Trp Gln Gly
260 265 270

Leu Trp Arg Glu Gly Gly Glu Gly Trp Asn Gln Val Glu Pro Ala Lys
275 280 285

Glu Ser Glu Leu Leu Ala Gln Leu Gln Glu Gly Glu Phe Trp Val Glu
290 295 300

Glu Glu Glu Phe Leu Arg Glu Phe Asp Glu Val Thr Ile Gly Tyr Pro
305 310 315 320

Val Thr Glu Ala Gly His Leu Gln Ser Leu His Thr Glu Arg Val Leu
325 330 335

Cys His Thr Arg Thr Leu Pro Gly Ala Trp Val Thr Gly Gln Ser Ala
340 345 350

Gly Gly Cys Arg Asn Asn Ser Cys Phe Pro Cys Asn Pro Lys Phe Trp
355 360 365

Leu Arg Leu Leu Glu Pro Ser Glu Val Cys Val Ala Val Leu Gln Arg
370 375 380

Pro Arg Arg Arg Leu Val Gly Gln Thr Arg Ala Leu Ala Gly Ala Ser
385 390 395 400

Pro Ala Pro Val Asn Leu Pro Gly Lys Asp Tyr Gln Ala Val Gly Leu
405 410 415

His Ile Trp Lys Val Glu Lys Arg Lys Ile Ser Leu Pro Arg Val Leu
420 425 430

Ser Ala Pro Pro Val Ala Gly Thr Ala Cys His Ala Tyr Asp Arg Glu
435 440 445

Ile His Leu Arg Cys Glu Leu Ser Pro Gly Tyr Tyr Leu Ala Val Pro
450 455 460

Ser Thr Phe Leu Lys Asp Val Pro Gly Gln Phe Leu Leu Arg Val Phe
465 470 475 480

Phe Thr Gly Lys Ile Ser Leu Ser Ala Val Arg Leu Ala Thr Lys Gly
 485 490 495
 Ala Ser Pro Gly Thr Ala Leu Pro Ala Gly Glu Trp Glu Thr Val Gln
 500 505 510
 Leu Gln Gly Cys Trp Arg Ala Gly Gln Thr Ala Gly Gly Ser Arg Asn
 515 520 525
 Phe Ala Ser Tyr Pro Cys Asn Pro Cys Leu Pro Phe Ser Val Pro Glu
 530 535 540
 Gly Ala Gly Pro Arg Tyr Ile Arg Ile Thr Leu Gln Gln His Cys Arg
 545 550 555 560
 Leu Ser Asp Ser Gln Leu His Pro Ile Gly Phe His Val Phe Gln Val
 565 570 575
 Pro Ala Asp Gly Glu Asn Gln Asp Ala Cys Ser Leu Leu Leu Gln Glu
 580 585 590
 Pro Leu Leu Ser Cys Val Pro His Arg Tyr Ala Gln Glu Val Ser Arg
 595 600 605
 Leu Cys Leu Leu Ser Val Gly Asn Tyr Arg Ile Val Pro Ser Thr Tyr
 610 615 620
 Leu Pro Asp Thr Glu Gly Thr Phe Thr Val Thr Ile Ala Thr Arg Ile
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 <211> 2511
 <212> DNA
 <213> Mus musculus

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180 185 190

Lys Val Val Thr Ala Leu Ala Gln Arg Pro Pro Thr Asp Val Gly Gln
195 200 205

Ala Glu Ala Thr Arg Lys Ala Ala Arg Met Val Trp Ala Asn Leu Leu
210 215 220

Val Phe Val Val Cys Phe Leu Pro Leu His Val Gly Leu Thr Val Arg
225 230 235 240

Leu Ala Val Gly Trp Asn Ala Cys Ala Leu Leu Glu Thr Ile Arg Arg
245 250 255

Ala Leu Tyr Ile Thr Ser Lys Leu Ser Asp Ala Asn Cys Cys Leu Asp
260 265 270

Ala Ile Cys Tyr Tyr Tyr Met Ala Lys Glu Phe Gln Glu Ala Ser Ala
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Cys Val Thr Leu Ala
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<211> 1875
<212> DNA
<213> Human

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Cys Leu Gln Ser Gly Thr Leu Phe Arg Asp Glu Ala Phe Pro Pro Val
50 55 60
Pro Gln Ser Leu Gly Tyr Lys Asp Leu Gly Pro Asn Ser Ser Lys Thr
65 70 75 80
Tyr Gly Ile Lys Trp Lys Arg Pro Thr Glu Leu Leu Ser Asn Pro Gln
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Phe Ile Val Asp Gly Ala Thr Arg Thr Asp Ile Cys Gln Gly Ala Leu
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Gly Asp Cys Trp Leu Leu Ala Ala Ile Ala Ser Leu Thr Leu Asn Asp
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Thr Leu Leu His Arg Val Val Pro His Gly Gln Ser Phe Gln Asn Gly
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Tyr Ala Gly Ile Phe His Phe Gln Leu Trp Gln Phe Gly Glu Trp Val
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Asp Val Val Val Asp Asp Leu Leu Pro Ile Lys Asp Gly Lys Leu Val
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Phe Val His Ser Ala Glu Gly Asn Glu Phe Trp Ser Ala Leu Leu Glu
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Lys Ala Tyr Ala Lys Val Asn Gly Ser Tyr Glu Ala Leu Ser Gly Gly
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Ser Thr Ser Glu Gly Phe Glu Asp Phe Thr Gly Gly Val Thr Glu Trp
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Tyr Glu Leu Arg Lys Ala Pro Ser Asp Leu Tyr Gln Ile Ile Leu Lys
225 230 235 240
Ala Leu Glu Arg Gly Ser Leu Leu Gly Cys Ser Ile Asp Ile Ser Ser

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Phe 225	Lys	Ile	Ile	Gln 230	Lys	Ala	Leu	Gln	Lys 235	Gly	Ser	Leu	Leu	Gly	Cys 240
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Glu	Ser	Asn 275	Gly	Ser	Leu	Gln 280	Lys	Leu	Ile	Arg	Ile 285	Arg	Asn	Pro	Trp
Gly	Glu 290	Val	Glu	Trp	Thr	Gly 295	Arg	Trp	Asn	Asp 300	Asn	Cys	Pro	Ser	Trp
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Asp	Gly	Glu	Phe 325	Trp	Met	Ser	Phe	Ser 330	Asp	Phe	Leu	Arg	His 335	Tyr	Ser
Arg	Leu	Glu	Ile 340	Cys	Asn	Leu	Thr 345	Pro	Asp	Thr	Leu	Thr 350	Ser	Asp	Thr
Tyr	Lys 355	Lys	Trp	Lys	Leu	Thr 360	Lys	Met	Asp	Gly	Asn 365	Trp	Arg	Arg	Gly
Ser	Thr 370	Ala	Gly	Gly	Cys 375	Arg	Asn	Tyr	Pro	Asn 380	Thr	Phe	Trp	Met	Asn
Pro 385	Gln	Tyr	Leu	Ile 390	Lys	Leu	Glu	Glu	Glu 395	Asp	Glu	Asp	Glu	Glu	Asp 400
Gly	Glu	Ser	Gly 405	Cys	Thr	Phe	Leu	Val 410	Gly	Leu	Ile	Gln	Lys 415	His	Arg
Arg	Arg	Gln 420	Arg	Lys	Met	Gly	Glu 425	Asp	Met	His	Thr	Ile 430	Gly	Phe	Gly
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His Lys Lys Cys Leu Glu Lys Lys Val Leu Tyr Val Asp Pro Glu Phe
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Phe Val Trp Lys Arg Pro Pro Glu Ile Cys Glu Asn Pro Arg Phe Ile
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Pro Val Lys Lys Lys Lys Thr Lys Pro Ile Ile Phe Val Ser Asp Arg		
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Ala Asn Ser Asn Lys Glu Leu Gly Val Asp Gln Glu Ser Glu Glu Gly		
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Pro Gly Ser Ser Asp Gln Glu Ser Glu Glu Gln Gln Gln Phe Arg Asn		
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Ile Phe Lys Gln Ile Ala Gly Asp Asp Met Glu Ile Cys Ala Asp Glu		
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Thr His Gly Phe Thr Leu Glu Ser Cys Arg Ser Met Ile Ala Leu Met		
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Asp Thr Asp Gly Ser Gly Lys Leu Asn Leu Gln Glu Phe His His Leu
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 Asp Gln Ser Gly Thr Ile Asn Ser Tyr Glu Met Arg Asn Ala Val Asn
 740 745 750
 Asp Ala Gly Phe His Leu Asn Asn Gln Leu Tyr Asp Ile Ile Thr Met
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 Arg Tyr Ala Asp Lys His Met Asn Ile Asp Phe Asp Ser Phe Ile Cys
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 Val Asp Gly Ile Ser Ser His Asp Leu His Gln Gly Gln Val Gly Asn
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 Cys Trp Phe Val Ala Ala Cys Ser Ser Leu Ala Ser Arg Glu Ser Leu
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 Trp Gln Lys Val Ile Pro Asp Trp Lys Glu Gln Glu Trp Asp Pro Glu
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 Gln Leu Ile Tyr Cys His Ser Asn Ser Arg Asn Glu Phe Trp Cys Ala
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 370 375 380
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 385 390 395 400
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 405 410 415
 Lys Gly Glu Asn Leu Ala Ile Gly Phe Asp Ile Tyr Lys Val Glu Glu
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 Asn Arg Gln Tyr Arg Met His Ser Leu Gln His Lys Ala Ala Ser Ser
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 450 455 460
 Gly Arg Tyr Val Ile Ile Pro Thr Thr Phe Glu Pro Gly His Thr Gly
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Tyr	Asn	Val	Lys	Gly	Ile	Phe	Tyr	Arg	Lys	Lys	Leu	Ser	Gln	Pro	Ile
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Gln	Val	His	Leu	Lys	Ala	Asp	Pro	Asp	Asn	Leu	Gln	Ala	Leu	His	Thr
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Lys	Gln	Glu	Cys	Met	Lys	Asp	Gly	Arg	Leu	Phe	Cys	Asp	Pro	Thr	Phe
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Leu	Pro	Glu	Asn	Asp	Ser	Leu	Phe	Phe	Asn	Arg	Leu	Leu	Pro	Gly	Lys
		35					40					45			
Val	Val	Trp	Lys	Arg	Pro	Gln	Asp	Ile	Ser	Asp	Asp	Pro	His	Leu	Ile
	50					55					60				
Val	Gly	Asn	Ile	Ser	Asn	His	Gln	Leu	Ile	Gln	Gly	Arg	Leu	Gly	Asn
65					70					75					80
Lys	Ala	Met	Ile	Ser	Ala	Phe	Ser	Cys	Leu	Ala	Val	Gln	Glu	Ser	His
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Trp	Thr	Lys	Ala	Ile	Pro	Asn	His	Lys	Asp	Gln	Glu	Trp	Asp	Pro	Arg
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Lys	Pro	Glu	Lys	Tyr	Ala	Gly	Ile	Phe	His						

Abstract

450 455 460

Gly Ser Tyr Val Leu Val Pro Thr Met Phe Gln His Gly Arg Thr Ser
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Glu Phe Leu Leu Arg Ile Phe Ser Glu Val Pro Val Gln Leu Arg Glu
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Leu Thr Leu Asp Met Pro Lys Met Ser Cys Trp Asn Leu Ala Arg Gly
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Tyr Pro Lys Val Val Thr Gln Ile Thr Val His Ser Ala Glu Gly Leu
515 520 525

Glu Lys Lys Tyr Ala Asn Glu Thr Val Asn Pro Tyr Leu Ile Ile Lys
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Cys Gly Lys Glu Glu Val Arg Ser Pro Val Gln Lys Asn Thr Val His
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Pro Ile Ile Ile Gln Val Trp Asn Ser Arg Lys Phe Cys Asp Gln Phe
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Leu Gly Gln Val Thr Leu Asp Ala Asp Pro Ser Asp Cys Arg Asp Leu
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Leu Cys Pro Asn Pro Gln Phe Ile Val Gly Gly Ala Thr Arg Thr Asp

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Ile	Arg	Gln	Gly 100	Gly	Leu	Gly	Asp	Cys 105	Trp	Leu	Leu	Ala	Ala	Ile	Ala		
Ser	Leu	Thr 115	Leu	Asn	Glu	Lys	Leu 120	Leu	Tyr	Arg	Val	Leu 125	Pro	Arg	Asp		
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Gln 145	Tyr	Gly	Glu	Trp	Val 150	Glu	Val	Val	Ile	Asp 155	Asp	Arg	Leu	Pro	Thr 160		
Lys	Asn	Gly	Gln	Leu 165	Leu	Phe	Leu	His 170	Ser	Glu	Glu	Gly	Asn	Glu 175	Phe		
Trp	Ser	Ala 180	Leu	Leu	Glu	Lys	Ala 185	Tyr	Ala	Lys	Leu	Asn	Gly 190	Ser	Tyr		
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Ser	Ile	Asp	Val 245	Ser	Thr	Ala	Ala	Glu	Ala 250	Glu	Ala	Thr	Thr	Arg 255	Gln		
Lys	Leu	Val 260	Lys	Gly	His	Ala	Tyr	Ser 265	Val	Thr	Gly	Val	Glu 270	Glu	Val		
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Gly 290	Glu	Val	Glu	Trp	Ser	Gly 295	Ala	Trp	Ser	Asp	Asn 300	Ala	Pro	Glu	Trp		
Asn 305	Tyr	Ile	Asp	Pro	Arg 310	Arg	Lys	Glu	Glu	Leu 315	Asp	Lys	Lys	Ala	Glu 320		
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Arg	Leu	Glu 340	Ile	Cys	Asn	Leu	Ser	Pro 345	Asp	Ser	Leu	Ser	Ser 350	Glu	Glu		
Ile	His 355	Lys	Trp	Asn	Leu	Val	Leu 360	Phe	Asn	Gly	Arg	Trp 365	Thr	Arg	Gly		
Ser	Thr 370	Ala	Gly	Gly	Cys	Leu 375	Asn	Tyr	Pro	Gly	Thr 380	Tyr	Trp	Thr	Asn		
Pro 385	Gln	Phe	Lys	Ile	His 390	Leu	Asp	Glu	Val	Asp 395	Glu	Asp	Gln	Glu	Glu 400		
Gly	Thr	Ser	Glu 405	Pro	Cys	Cys	Thr	Val 410	Leu	Leu	Gly	Leu	Met	Gln 415	Lys		

[illegible]

1. *Chlorophyll a* (Chl *a*) is the primary photosynthetic pigment in most plants and algae. It is a green pigment that absorbs light energy in the blue and red regions of the visible spectrum. Chl *a* is essential for the light-dependent reactions of photosynthesis, where it converts light energy into chemical energy.

2. *Chlorophyll b* (Chl *b*) is an accessory pigment found in green plants and algae. It is a yellow-green pigment that absorbs light energy in the blue and orange-red regions of the visible spectrum. Chl *b* transfers the absorbed energy to Chl *a* for use in photosynthesis.

3. *Carotenoids* are a group of pigments that include carotenes and xanthophylls. They are responsible for the yellow, orange, and red colors seen in autumn foliage. Carotenoids absorb light energy in the blue and green regions of the visible spectrum and transfer the energy to Chl *a*. They also play a role in protecting the photosynthetic apparatus from damage by reactive oxygen species.

4. *Xanthophylls* are a subclass of carotenoids that are involved in the xanthophyll cycle. This cycle is a protective mechanism that helps plants dissipate excess light energy as heat, preventing damage to the photosynthetic apparatus. Xanthophylls are typically yellow or orange in color.

5. *Anthocyanins* are water-soluble pigments that give plants their red, purple, and blue colors. They are not directly involved in photosynthesis but can play a role in protecting plants from environmental stress, such as UV radiation and frost. Anthocyanins are found in the vacuoles of plant cells.

Phe	Lys	Asp	Phe	Lys	Ala	His	Phe	Asp	Lys	Val	Glu	Ile	Cys	Asn	Leu	
				325					330					335		
Thr	Pro	Asp	Ala	Leu	Glu	Glu	Asp	Ala	Ile	His	Lys	Trp	Glu	Val	Thr	
				340					345					350		
Val	His	Gln	Gly	Ser	Trp	Val	Arg	Gly	Ser	Thr	Ala	Gly	Gly	Cys	Arg	
				355					360					365		
Asn	Phe	Leu	Asp	Thr	Phe	Trp	Thr	Asn	Pro	Gln	Ile	Lys	Leu	Ser	Leu	
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Thr	Glu	Lys	Asp	Glu	Gly	Gln	Glu	Glu	Cys	Ser	Phe	Leu	Val	Ala	Leu	
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Met	Gln	Lys	Asp	Arg	Arg	Lys	Leu	Lys	Arg	Phe	Gly	Ala	Asn	Val	Leu	
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Asn	Lys	Asp	Phe	Phe	Arg	Tyr	His	Ala	Ser	Arg	Ala	Arg	Ser	Lys	Thr	
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Phe	Ile	Asn	Leu	Arg	Glu	Val	Ser	Asp	Arg	Phe	Lys	Leu	Pro	Pro	Gly	
				450					455					460		
Glu	Tyr	Ile	Leu	Ile	Pro	Ser	Thr	Phe	Glu	Pro	His	Gln	Glu	Ala	Asp	
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Phe	Cys	Leu	Arg	Ile	Phe	Ser	Glu	Lys	Lys	Ala	Ile	Thr	Arg	Asp	Met	
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Asp	Gly	Asn	Val	Asp	Ile	Asp	Leu	Pro	Glu	Pro	Pro	Lys	Pro	Thr	Pro	
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Pro	Asp	Gln	Glu	Thr	Glu	Glu	Glu	Gln	Arg	Phe	Arg	Ala	Leu	Phe	Glu	
				515					520					525		
Gln	Val	Ala	Gly	Glu	Asp	Met	Glu	Val	Thr	Ala	Glu	Glu	Leu	Glu	Tyr	
				530					535					540		
Val	Leu	Asn	Ala	Val	Leu	Gln	Lys	Lys	Lys	Asp	Ile	Lys	Phe	Lys	Lys	
				545					550					555		
Leu	Ser	Leu	Ile	Ser	Cys	Lys	Asn	Ile	Ile	Ser	Leu	Met	Asp	Thr	Ser	
				565					570					575		
Gly	Asn	Gly	Lys	Leu	Glu	Phe	Asp	Glu	Phe	Lys	Val	Phe	Trp	Asp	Lys	
				580					585					590		
Leu	Lys	Gln	Trp	Ile	Asn	Leu	Phe	Leu	Arg	Phe	Asp	Ala	Asp	Lys	Ser	
				595					600					605		
Gly	Thr	Met	Ser	Thr	Tyr	Glu	Leu	Arg	Thr	Ala	Leu	Lys	Ala	Ala	Gly	
				610					615					620		
Phe	Gln	Leu	Ser	Ser	His	Leu	Leu	Gln	Leu	Ile	Val	Leu	Arg	Tyr	Ala	
				625					630					635		
Asp	Glu	Glu	Leu	Gln	Leu	Asp	Phe	Asp	Asp	Phe	Leu	Asn	Cys	Leu	Val	

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645 650 655
Arg Leu Glu Asn Ala Ser Arg Val Phe Gln Ala Leu Ser Thr Lys Asn
660 665 670
Lys Glu Phe Ile His Leu Asn Ile Asn Glu Phe Ile His Leu Thr Met
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